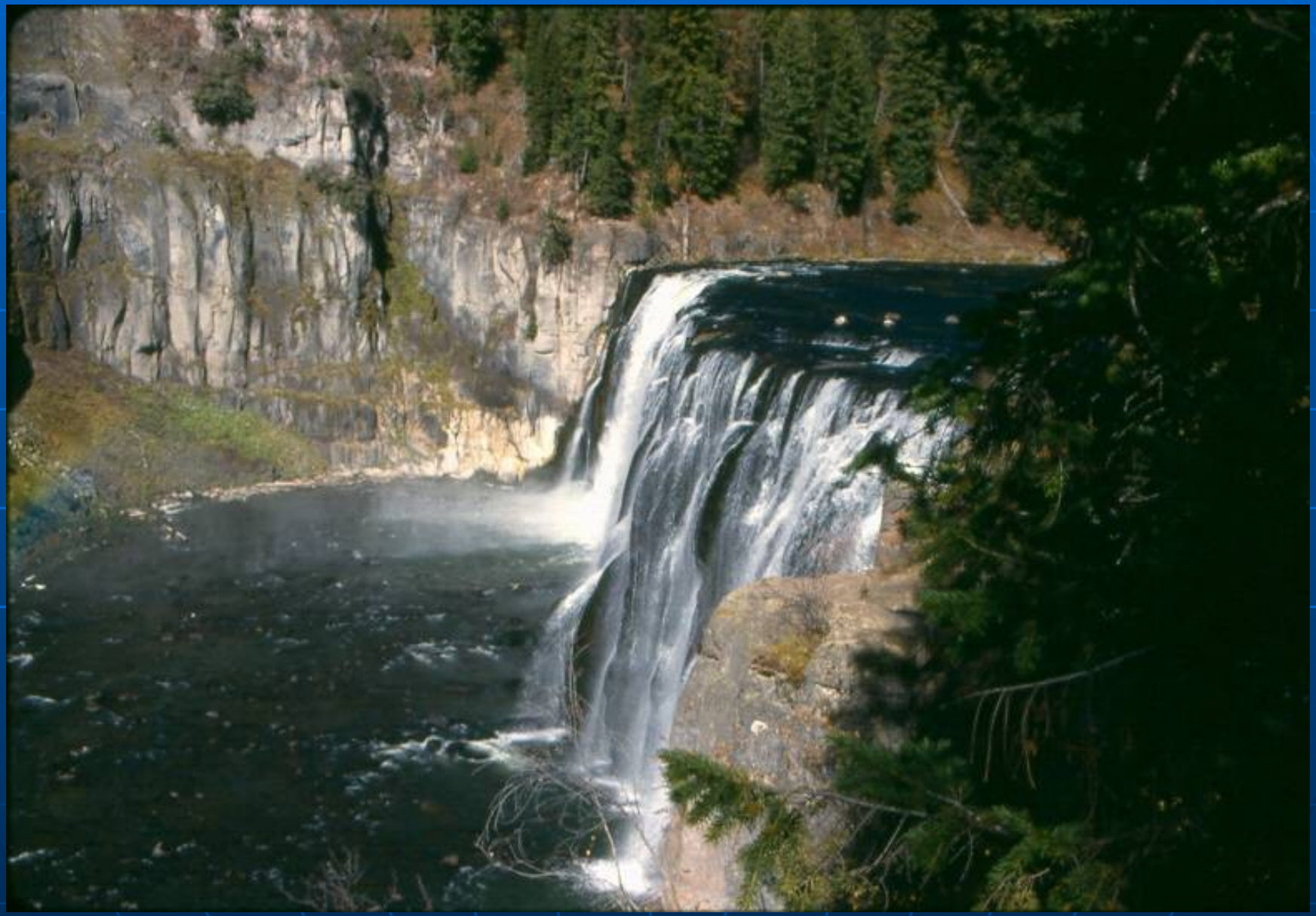
Water And Dams In Today's World

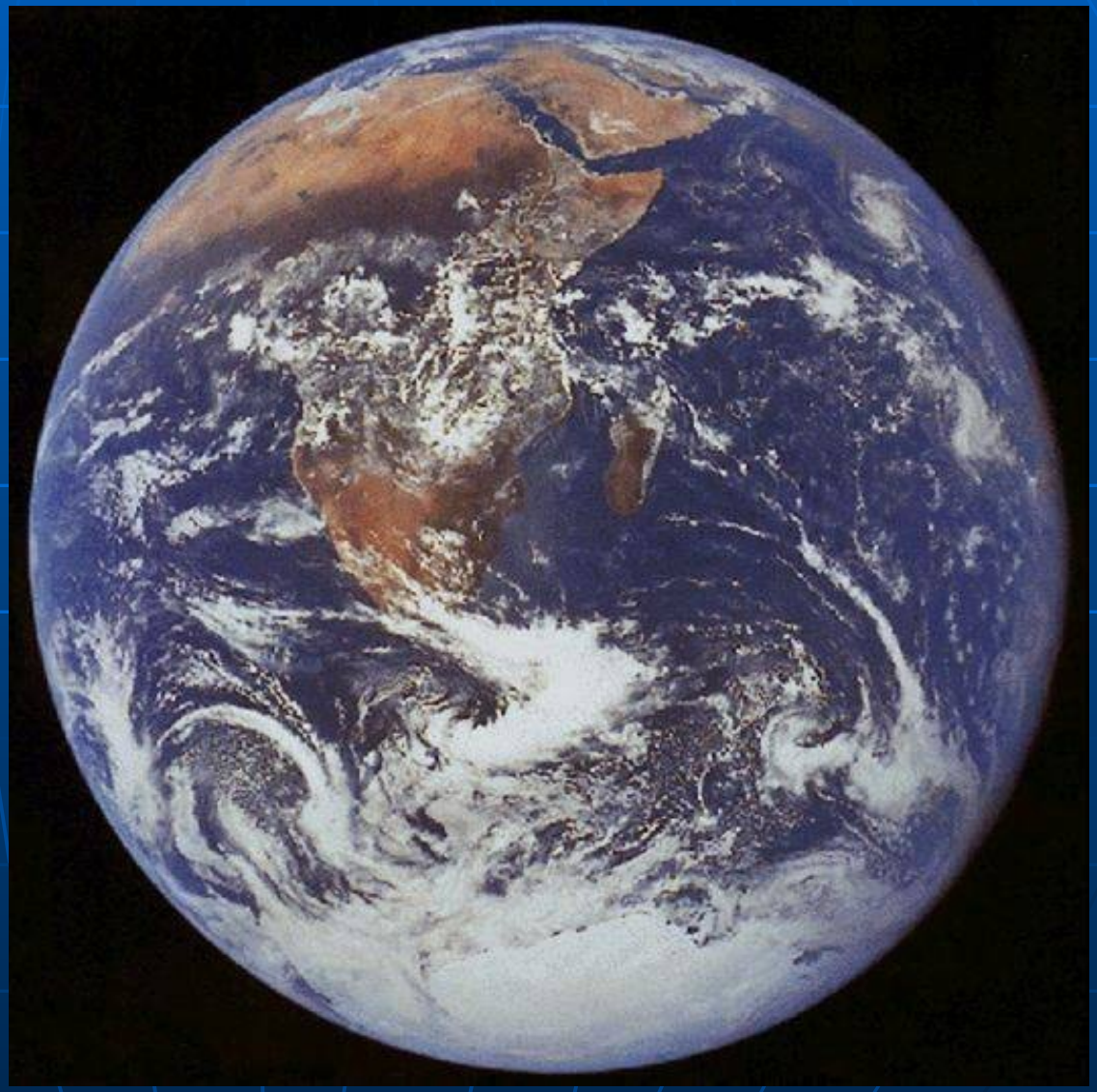
United States Society on Dams

The sound of water in a stream is pleasant to your ears, but it’s what is behind this scene that’s important.

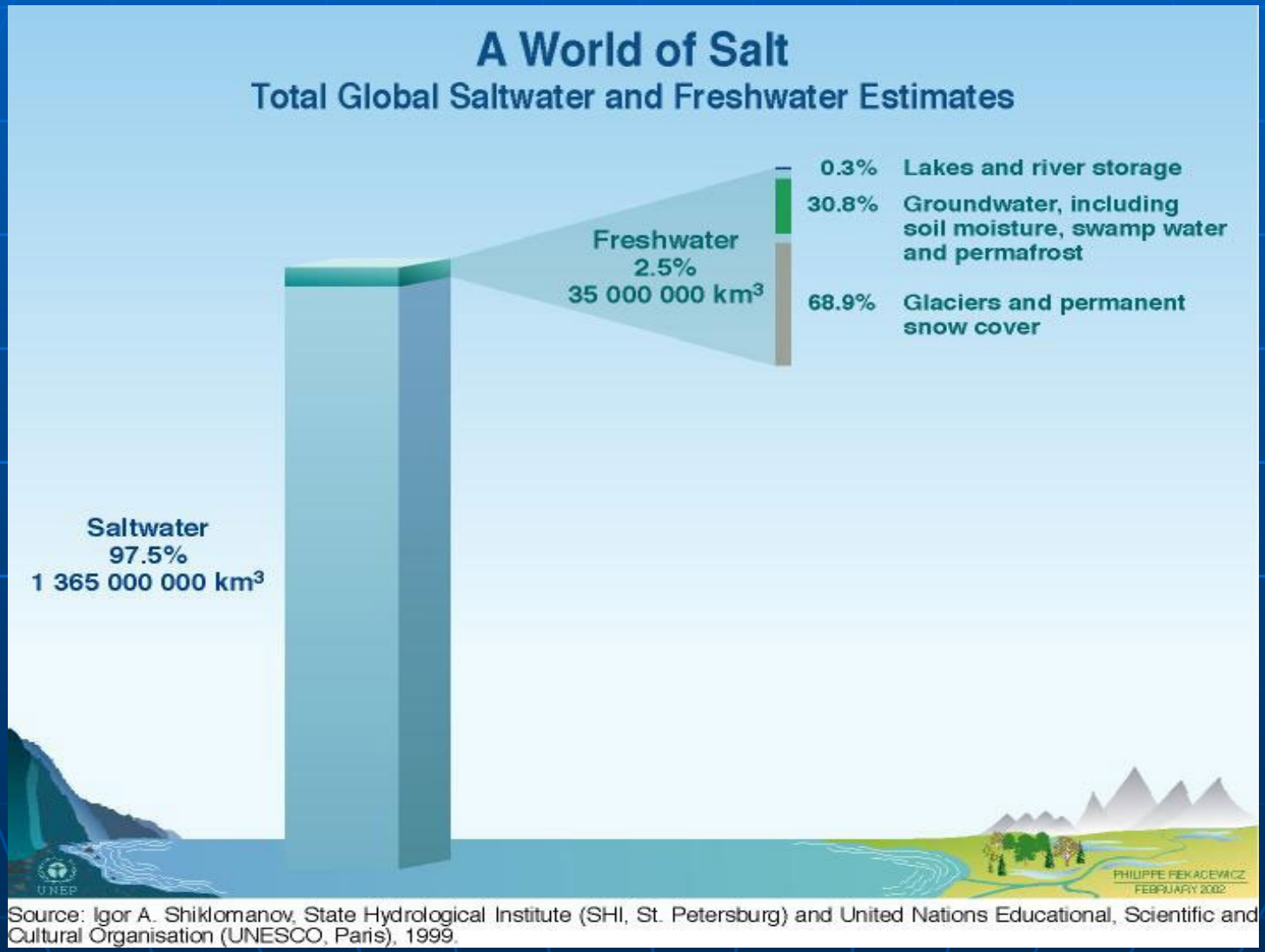
Water is essential for all life on earth. Control and Distribution of water has challenged mankind for thousands of years.



Our earth is often called the water planet. Water covers 70 % of the earth’s surface. It’s the only place in our solar system with liquid water. Water is what sustains us. Water has always driven civilization.



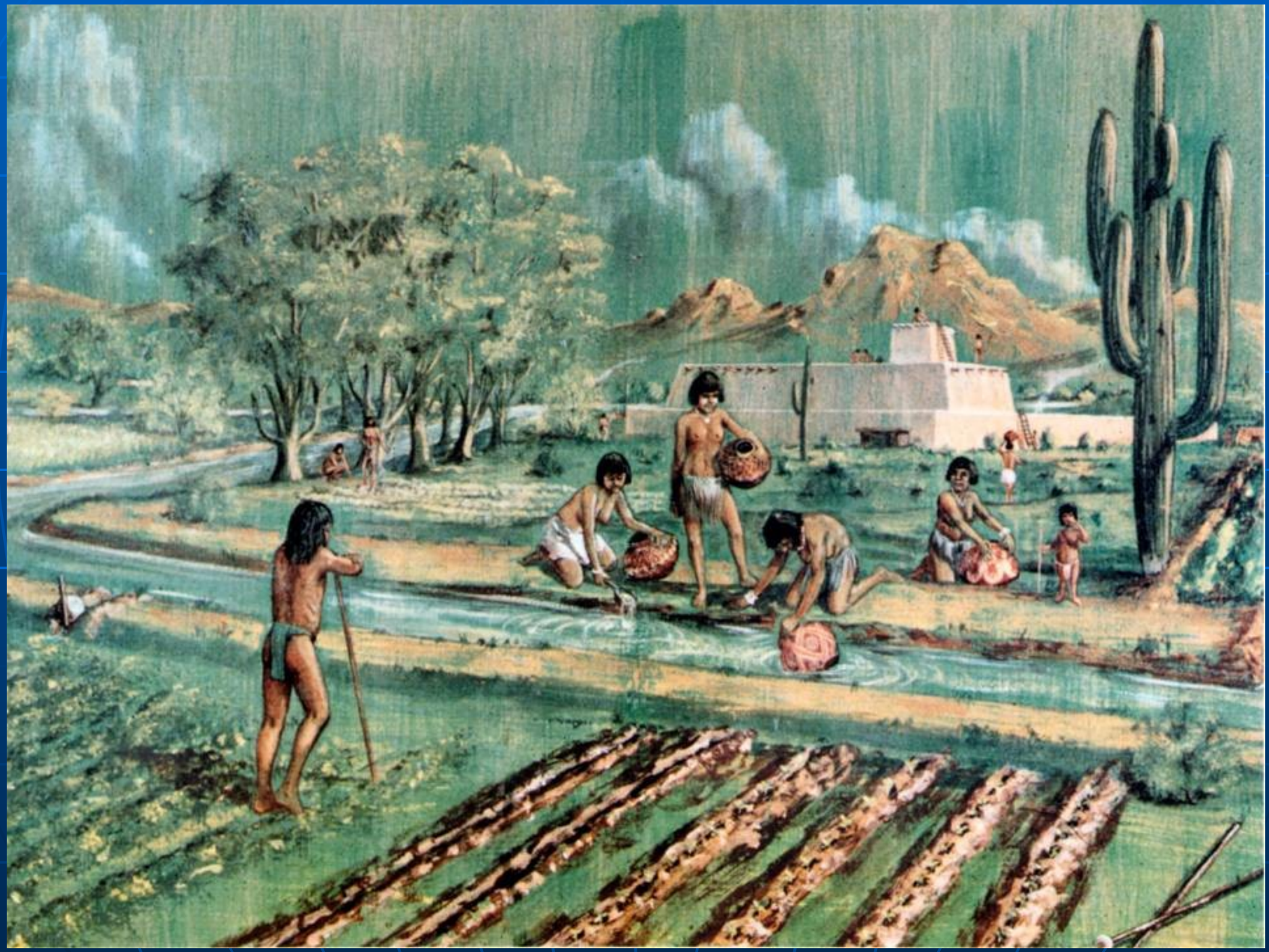
Yet we live in a world of salt. 97.5% is saltwater, 1.7% in glaciers and snow cover, and less than 1% is fresh water available to us and many plants and animals.



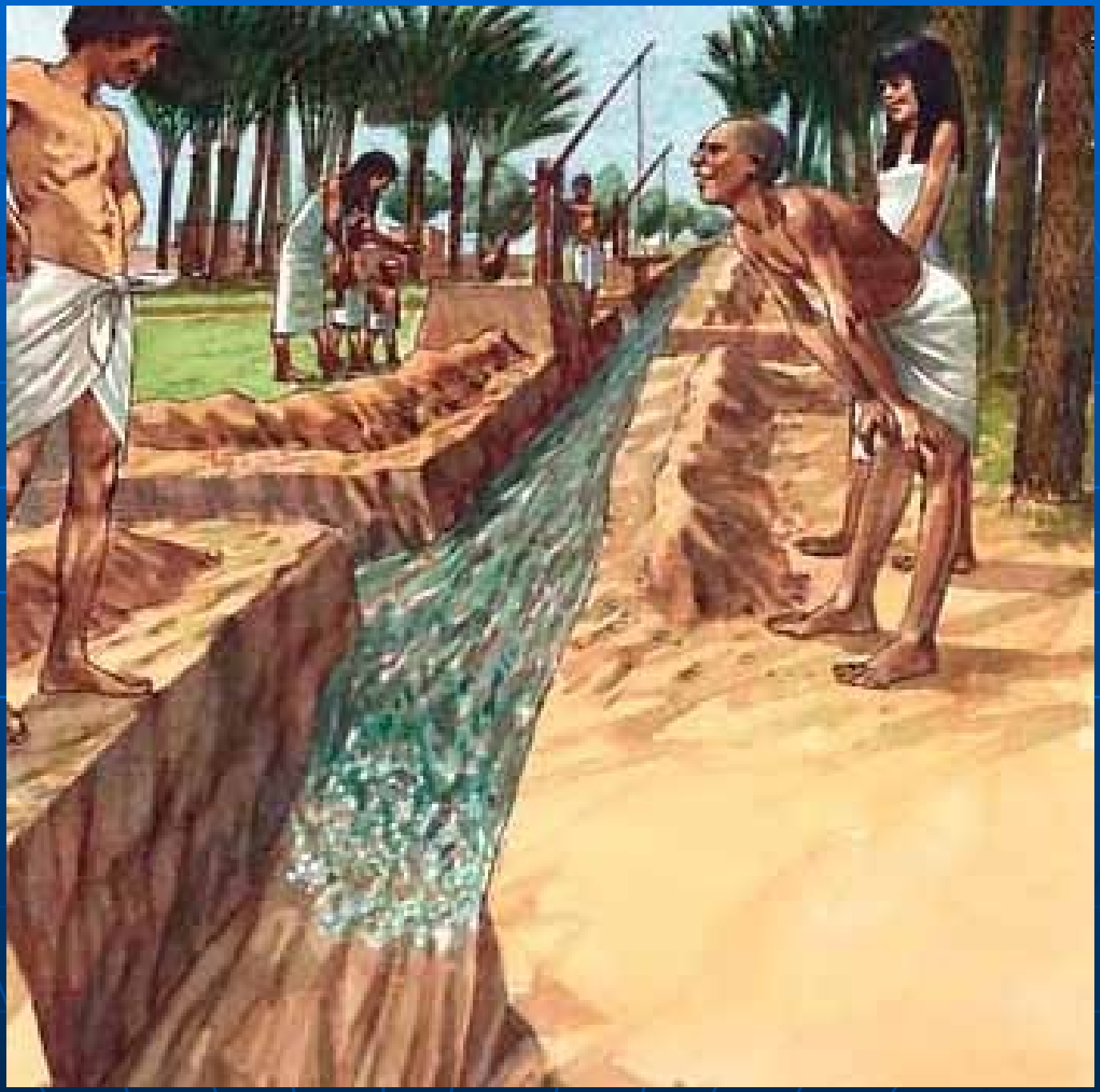
Source: Igor A. Shiklomanov, State Hydrological Institute (SHI, St. Petersburg) and United Nations Educational, Scientific and Cultural Organisation (UNESCO, Paris), 1999.

Early civilizations, in America and around the world, learned that water isn’t (always) available where it’s needed.

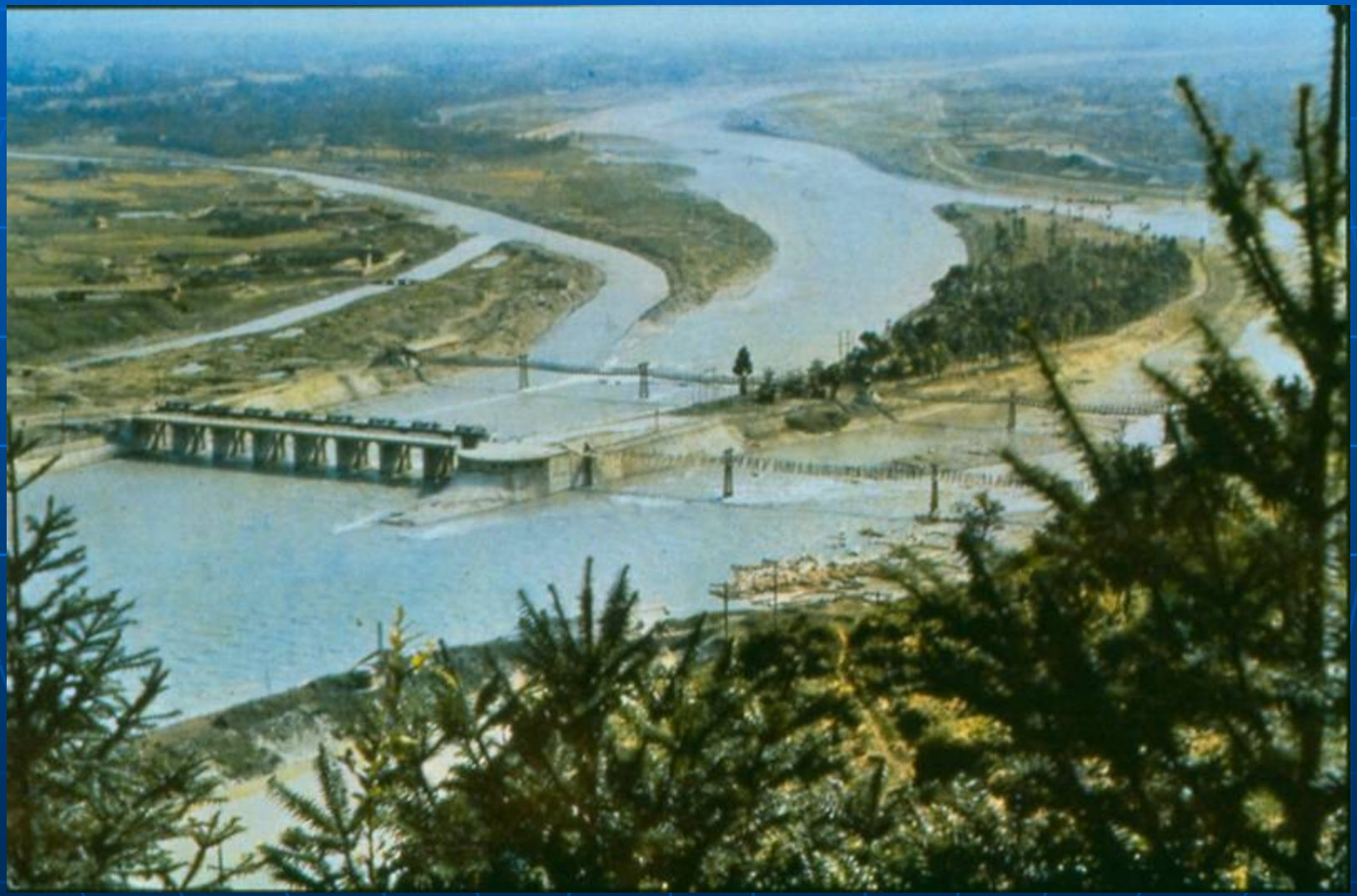
So, they undertook extensive water management projects as with the early Hohokam Indians in the Southwest,



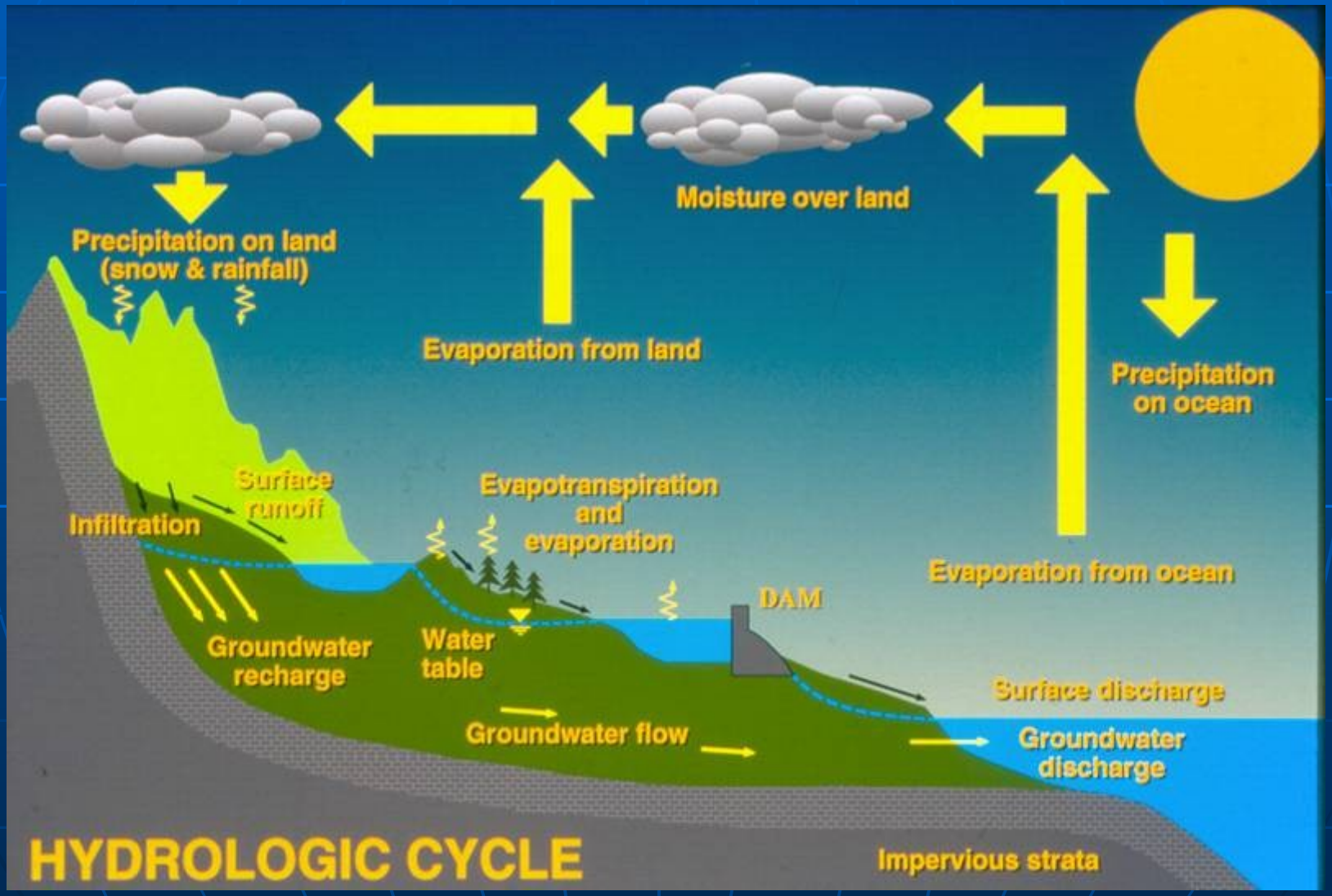
Or, irrigation in ancient Egypt.



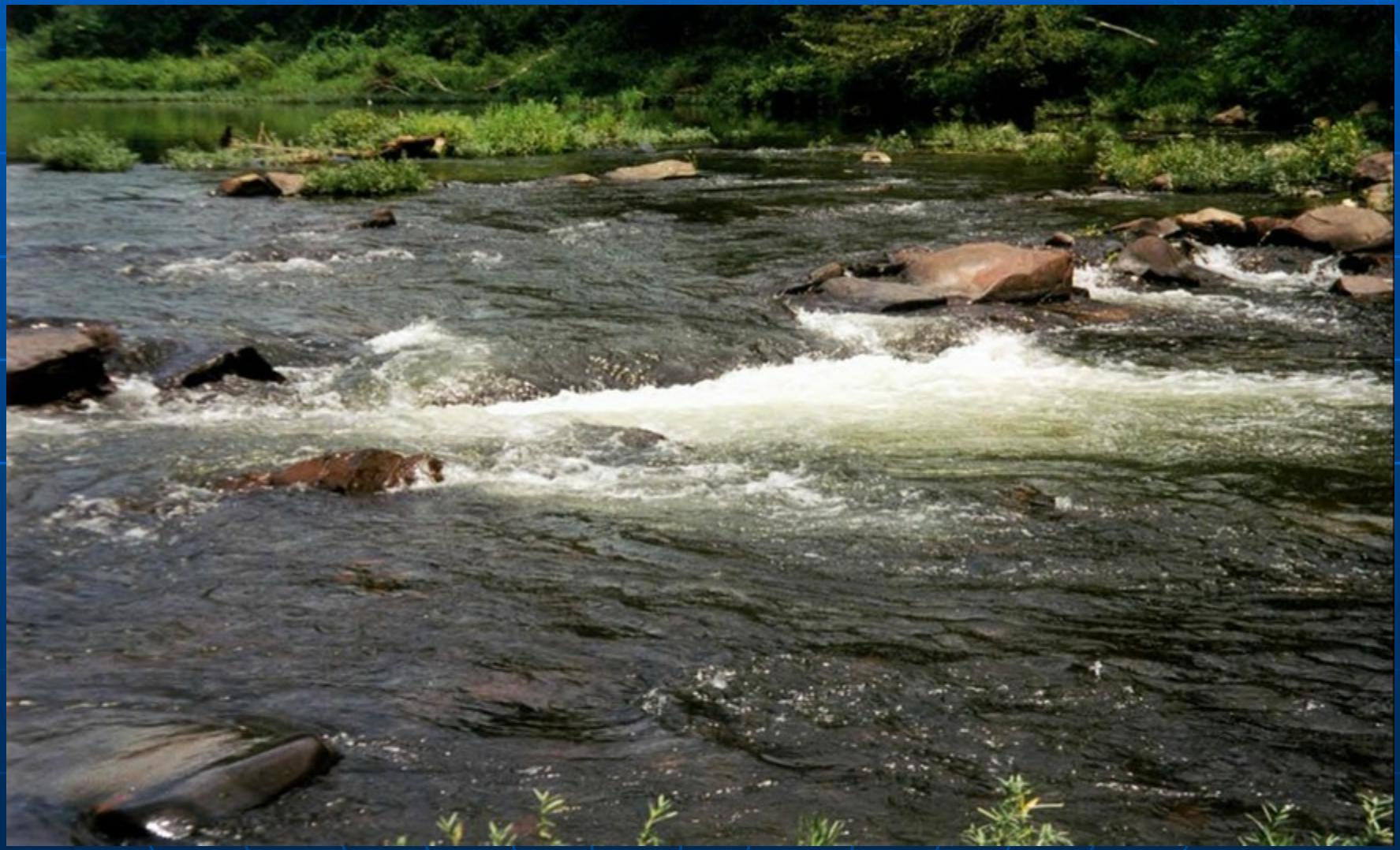
The Chinese have long recognized the need for dams; this diversion dam was first built in 4,000 B.C. and since enlarged as you see it here.



The water we see and use from our streams is a never-ending cycle of rain and snowfall. Runoff to the oceans and evaporation to create water vapor which again condenses and falls as rain and snow is called the Hydrologic Cycle.



Water is a vital resource needed to sustain civilization. In many parts of the world rain and snow fall only in the rainy season while the maximum demand for water is during the warm dry season for raising crops and domestic use.



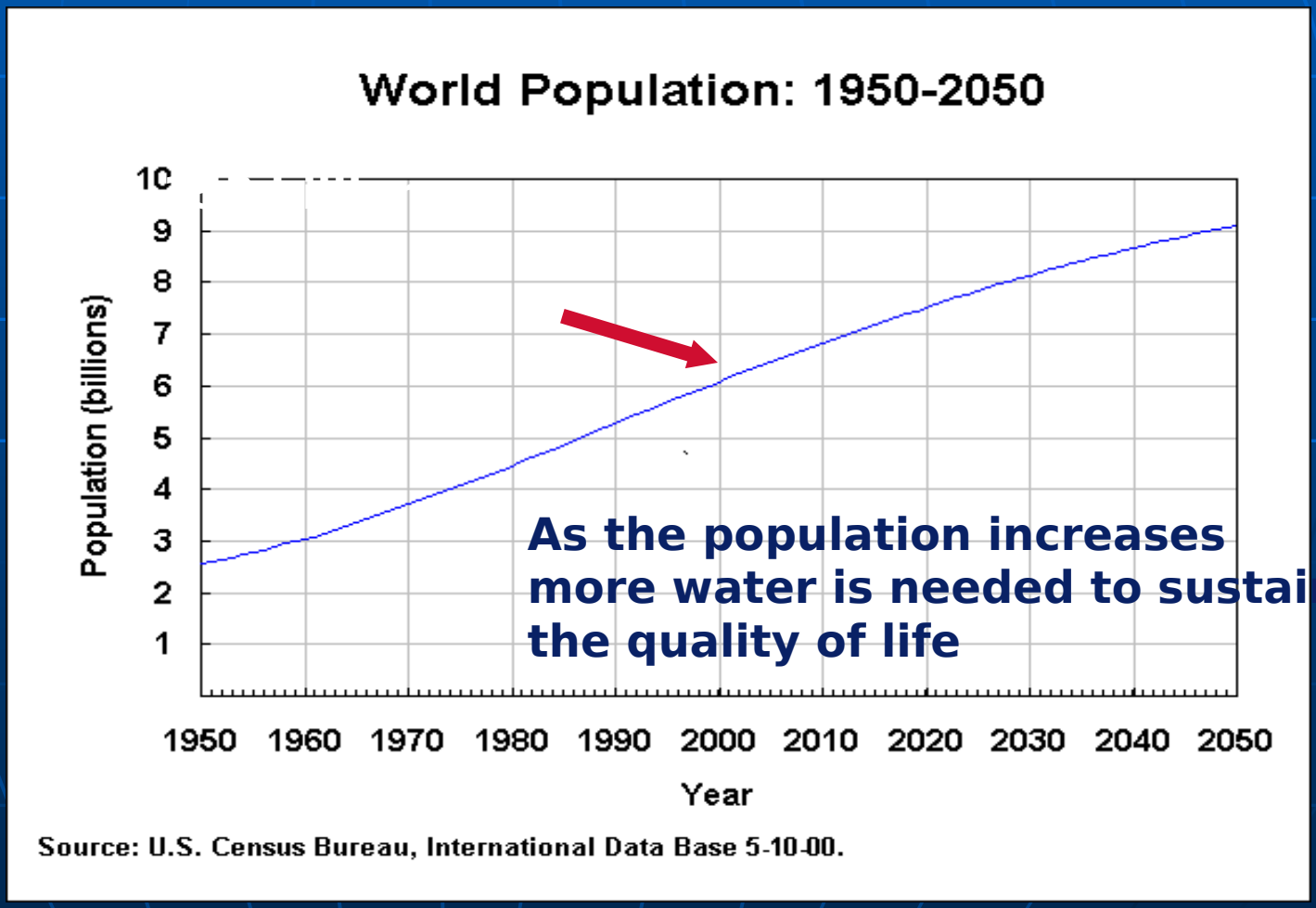
Civilizations also learned that water often isn't available when it's needed. Reservoirs, created by dams, are the major solution to storing water during times of excess for use during times of shortage.

Historic use of water power.

There are many examples of the historic use of water power such as McCormick’s Mill, and

the famous Mabry Mill on the Blue Ridge Parkway.

Rapid increases in the world's population created a high priority need to control and distribute water within each nation. World population stands at about 6.2 billion and will climb to more than 9 billion by 2050. And as population grows so does our demand for water. In fact over the past 50 years we have doubled our per capita consumption. Let's look at a unique view of the population issue.

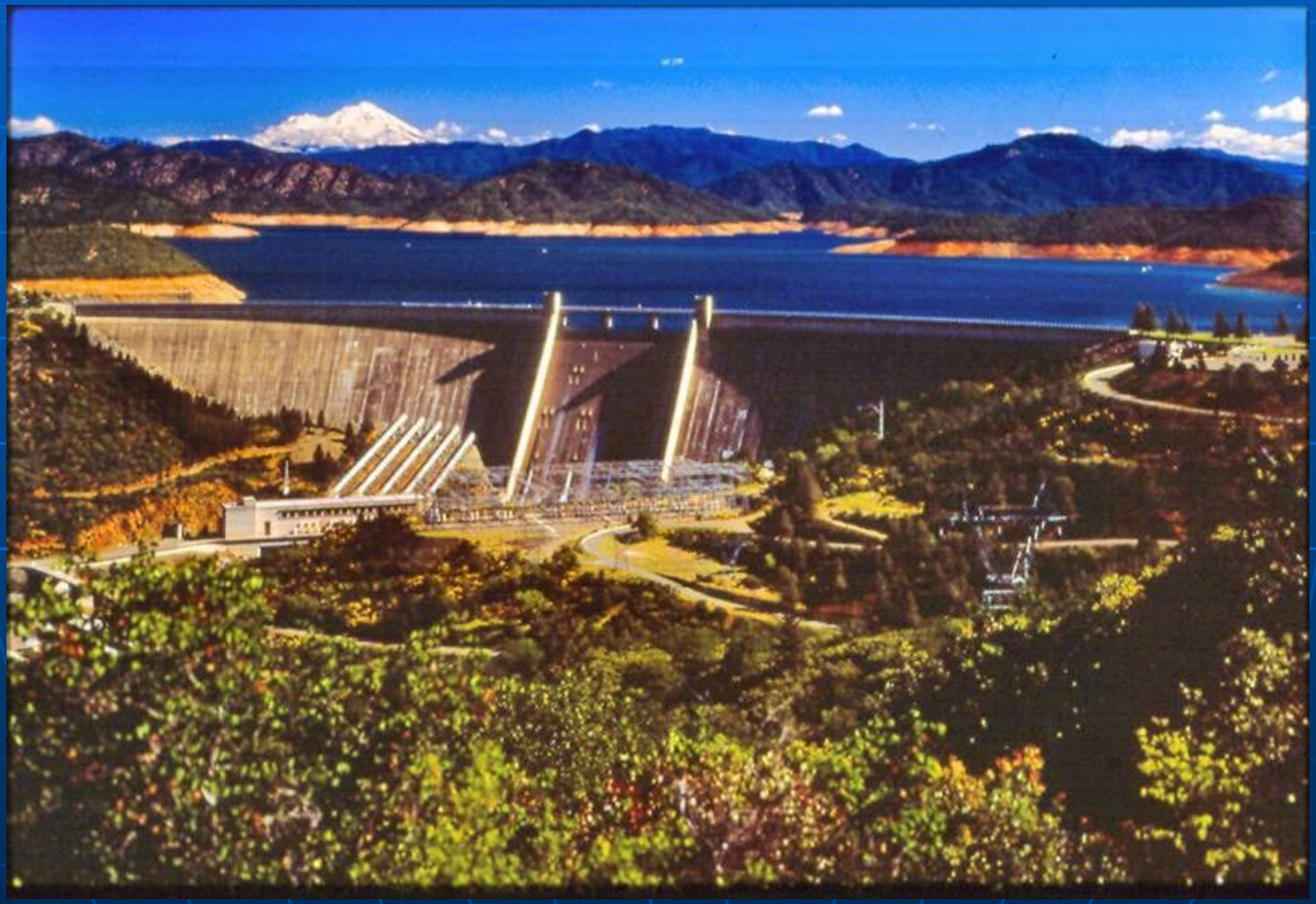


About 65 years ago, the International Commission on Large Dams was founded to provide a forum for sharing experience in dam and water resources engineering.

The United States, represented by the U.S. Society on Dams, or USSD, was one of the founding members, and today is one of the nearly 80 member countries.

United States Society on Dams

USSD's goal is to promote professional and public awareness of the need for dams — dams operated in concert with our total environment.



Dams are constructed to conserve water that would otherwise flow to the ocean

and would not be available to supply our needs.

Irrigation is important to sustain life as we know it.

Water is transported from reservoirs formed by dams through parched lands to provide,

clean and adequate water supplies to quench the thirst of our cities,

our towns, and rural communities.

Transported water is also used to supply water to irrigate our lands,

to grow the crops we need,

and the trees that provide many types of food we need.

Flood control means to control the devastating forces of water on a rampage during a flood.

Which can cause major damage and hardship.

Thankfully, in today's world, failures of this sort are very rare. And there are good reasons for that. Engineers use the highest standards during the design and construction of dams.

Quail Creek Dam, Utah
1 Jan 1989

Meadows Pond Dam, NH
13 Mar 1996

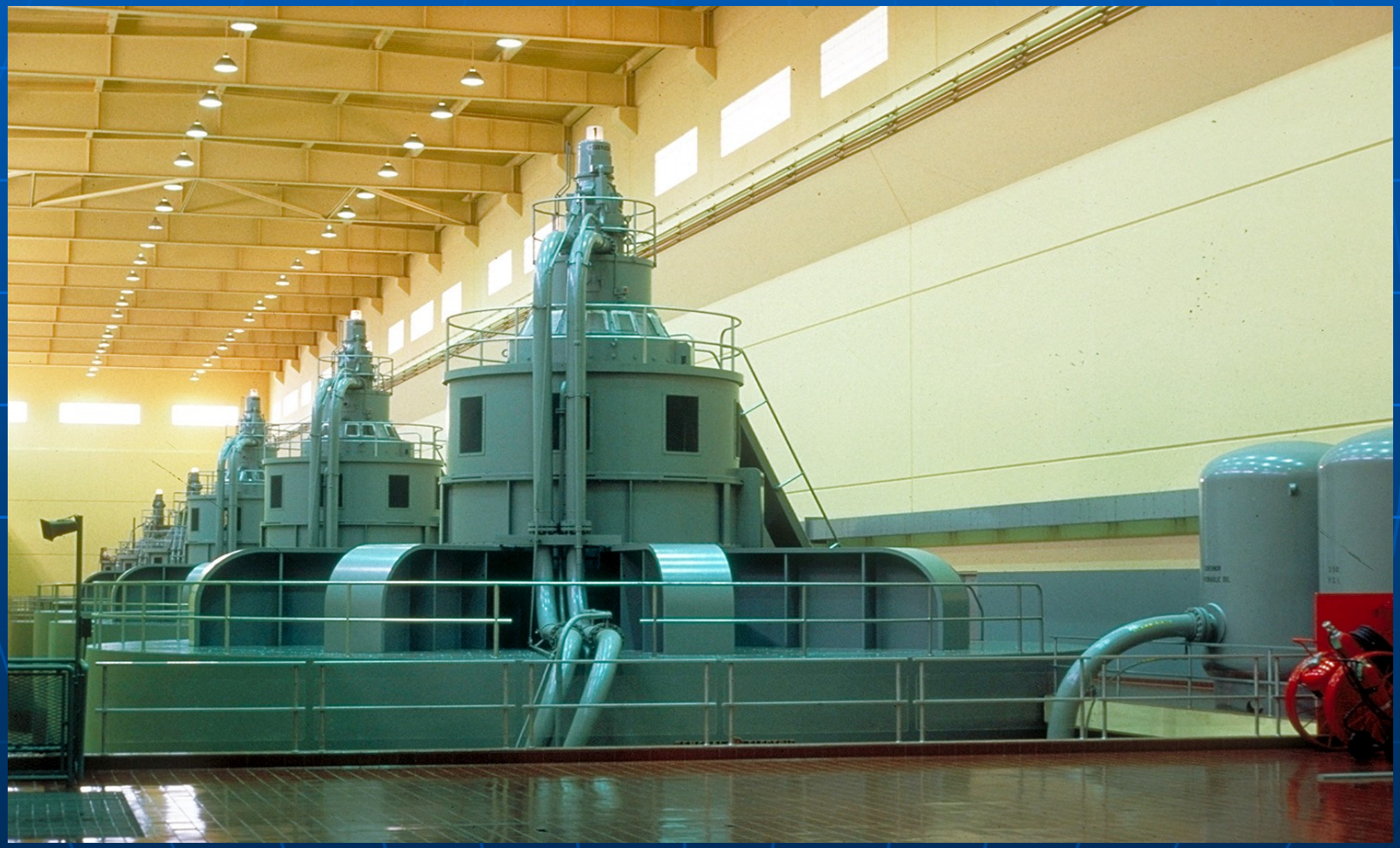
These standards ensure that as dams age they will continue to serve us for many generations. Maintenance is continuous,

with owners and government agencies, and private organizations providing periodic inspections. And since 9/11, security has been stepped up even further.

Dams also provide a steady and adequate flow in our major rivers to provide for the economical, energy efficient transportation of goods. Economical water transportation saves precious fossil fuels and noise pollution.

One Mississippi River barge replace 15 Railroad cars or 60 Semi Trailer-Trucks.

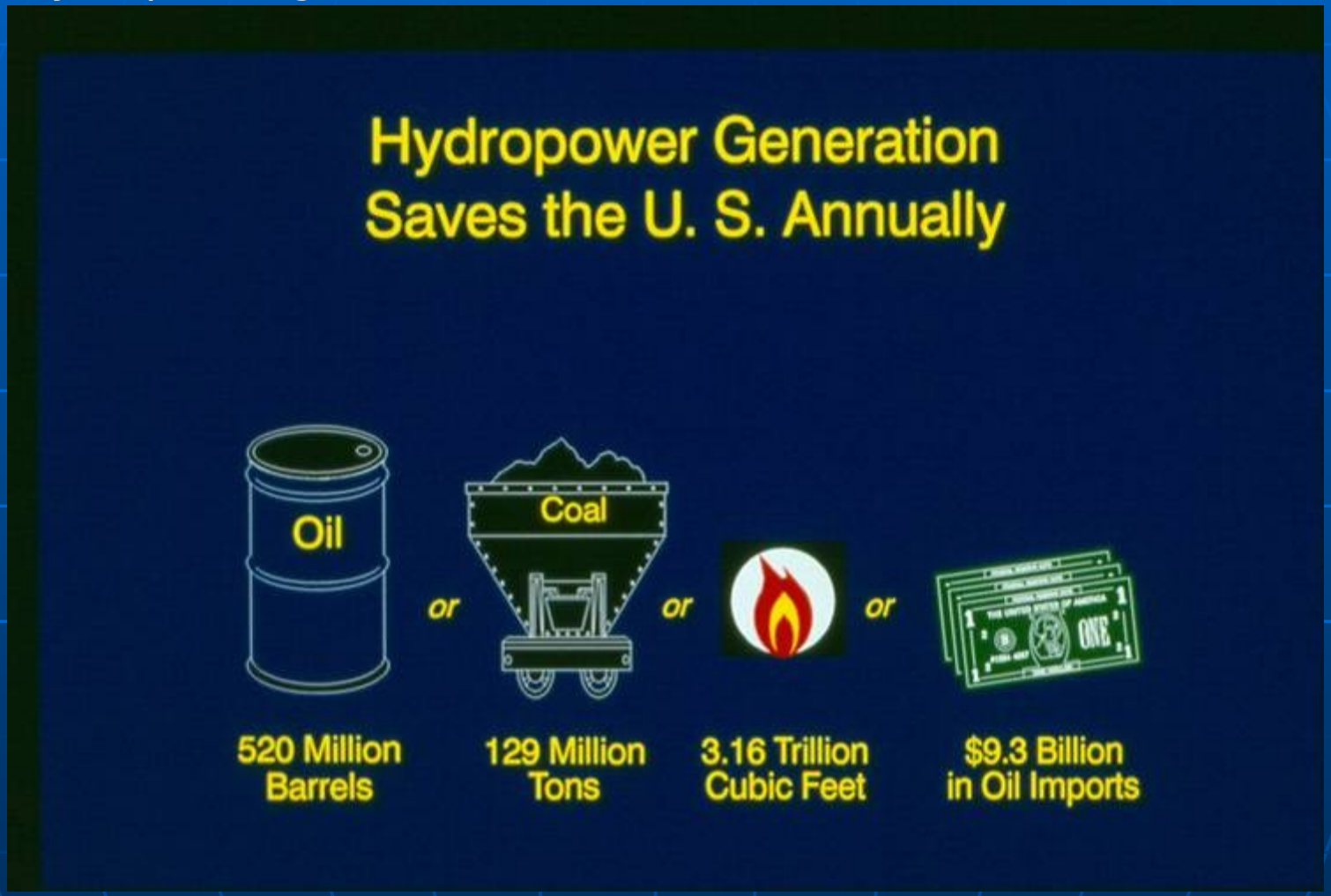
Renewable energy is a major benefit of dams,



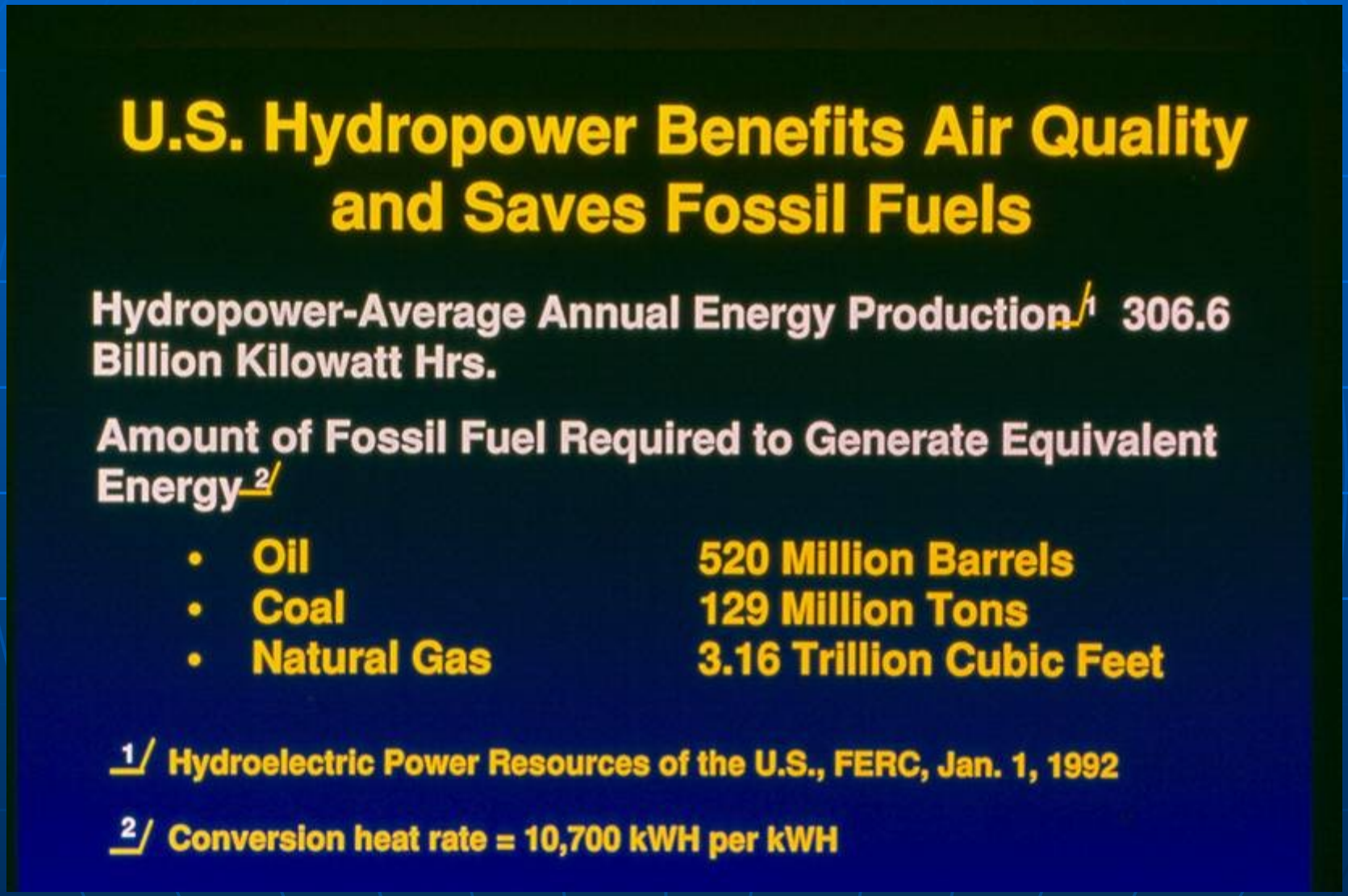
creating electricity that's clean, non—polluting and inexpensive — generated by water released from dams.

Hydropower is our most plentiful and efficient renewable resource for electric generation.

Hydropower generation saves fossil fuels,



an important contribution to our energy production and energy independence.


U.S. Hydropower Benefits Air Quality and Saves Fossil Fuels
Hydropower-Average Annual Energy Production 1/ 306.6 Billion Kilowatt Hrs.
Amount of Fossil Fuel Required to Generate Equivalent Energy 2/
• Oil 520 Million Barrels
• Coal 129 Million Tons
• Natural Gas 3.16 Trillion Cubic Feet
1/ Hydroelectric Power Resources of the U.S., FERC, Jan. 1, 1992
2/ Conversion heat rate = 10,700 kWH per kWH

Hydropower also prevents pollutants from burning fossil fuels and benefits air quality.

U.S. Hydropower Benefits Air Quality by Eliminating Pollutants [1]

Fossil Fuel	Particulates	Sulfur Dioxide	Nitrogen Oxide	Carbon Monoxide	Carbon Dioxide
Oil	-	1.03	0.80	0.05	272.9
Coal	7.70	2.51	1.16	0.06	295.9 [2]
Gas	-	0.001	0.65	0.06	188.3

[1] Amount of pollutants a fossil fuel (coal, oil or gas) would add to the atmosphere if the annual 306.6 billion kilowatt-hours generated by U.S. hydropower were produced by each type of fossil fuel.

[2] Example: If all the energy produced by hydropower were instead produced by coal, pollutants from coal would increase by about 16% (coal presently produces about 57% of the U.S. electric energy).

Environmental concerns are addressed through the enhancement of fish and wildlife habitat . . .

Protecting endangered species and our American symbols is important in the proper management of water and the environment.

Environmental stewardship is our obligation while we provide for the water needs of society.

The construction of fish ladders which allow fish to go upstream to reproduce, even during periods of low flow.

Fish passage around dams is important to the preservation of important fish species.

Recreation

Water creates recreational areas that are enjoyed for boating,

hiking,

camping,

water skiing,

swimming,

white water rafting,

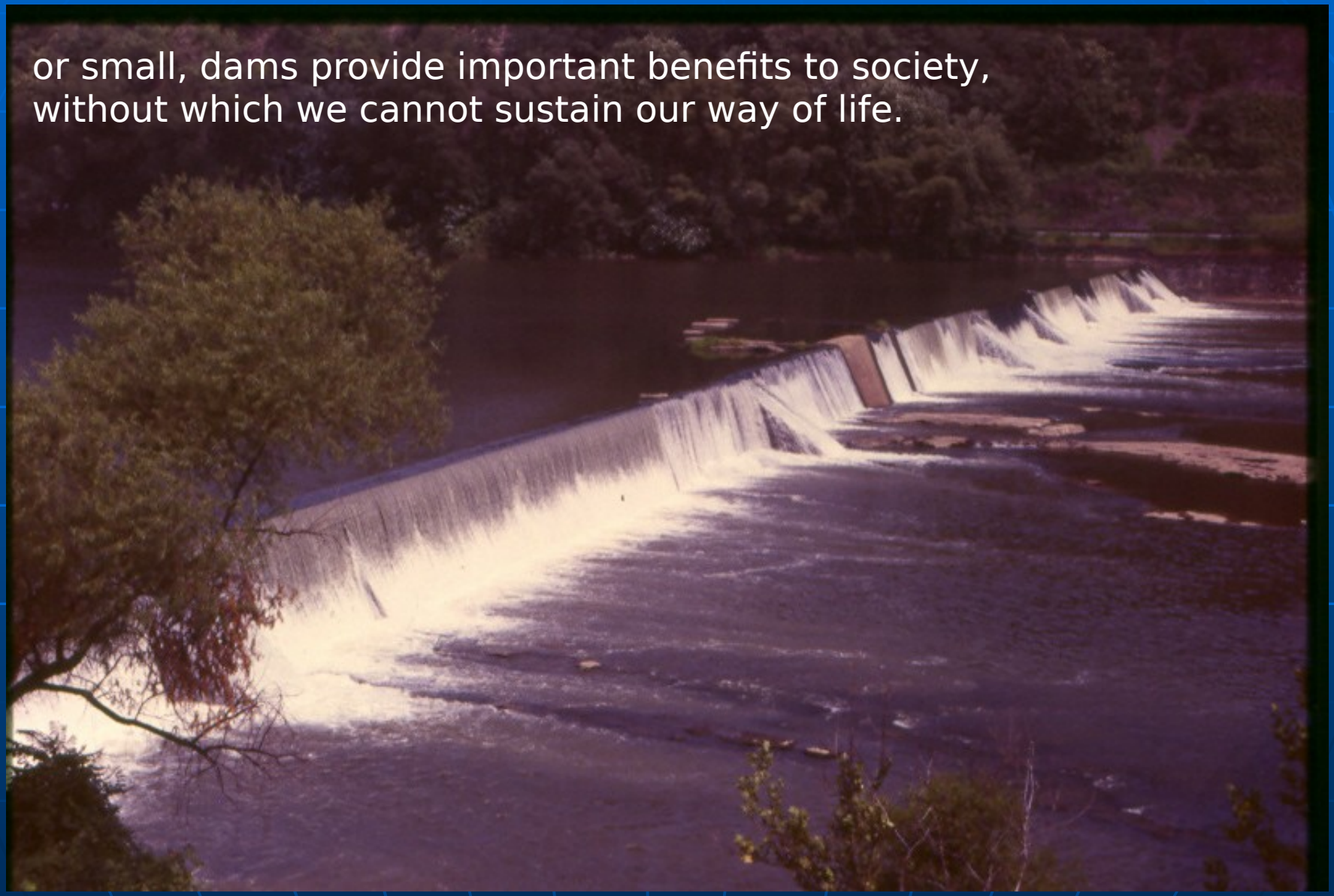
or fishing.

Recreation is the foremost use of the 77,000 reservoirs in the U. S.

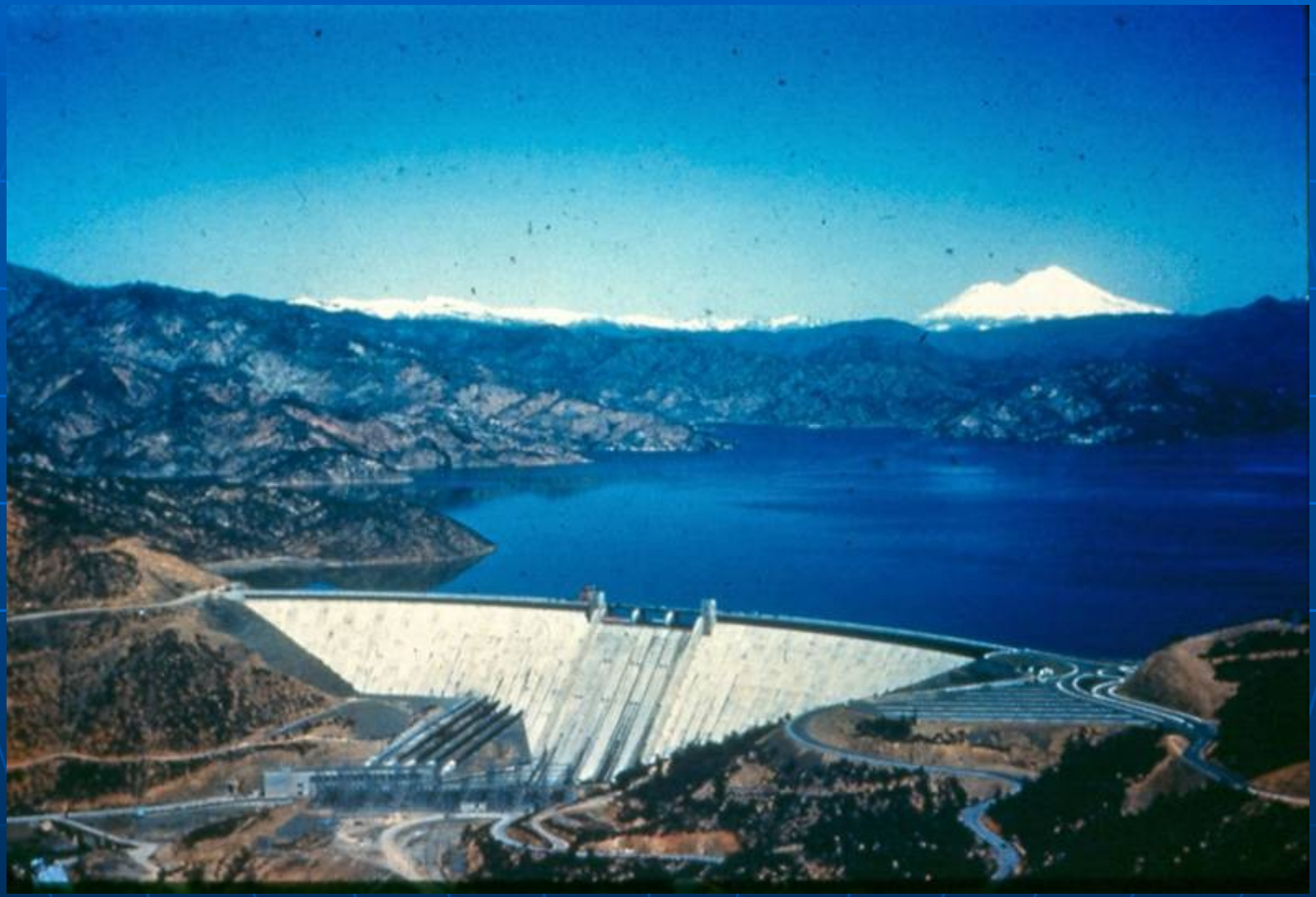
Careful management around reservoirs to meet the environmental needs of the area is critical.

The enhancement of the quality of our water supplies for years to come are additional benefits of dams.

Whether large,


or small, dams provide important benefits to society,
without which we cannot sustain our way of life.

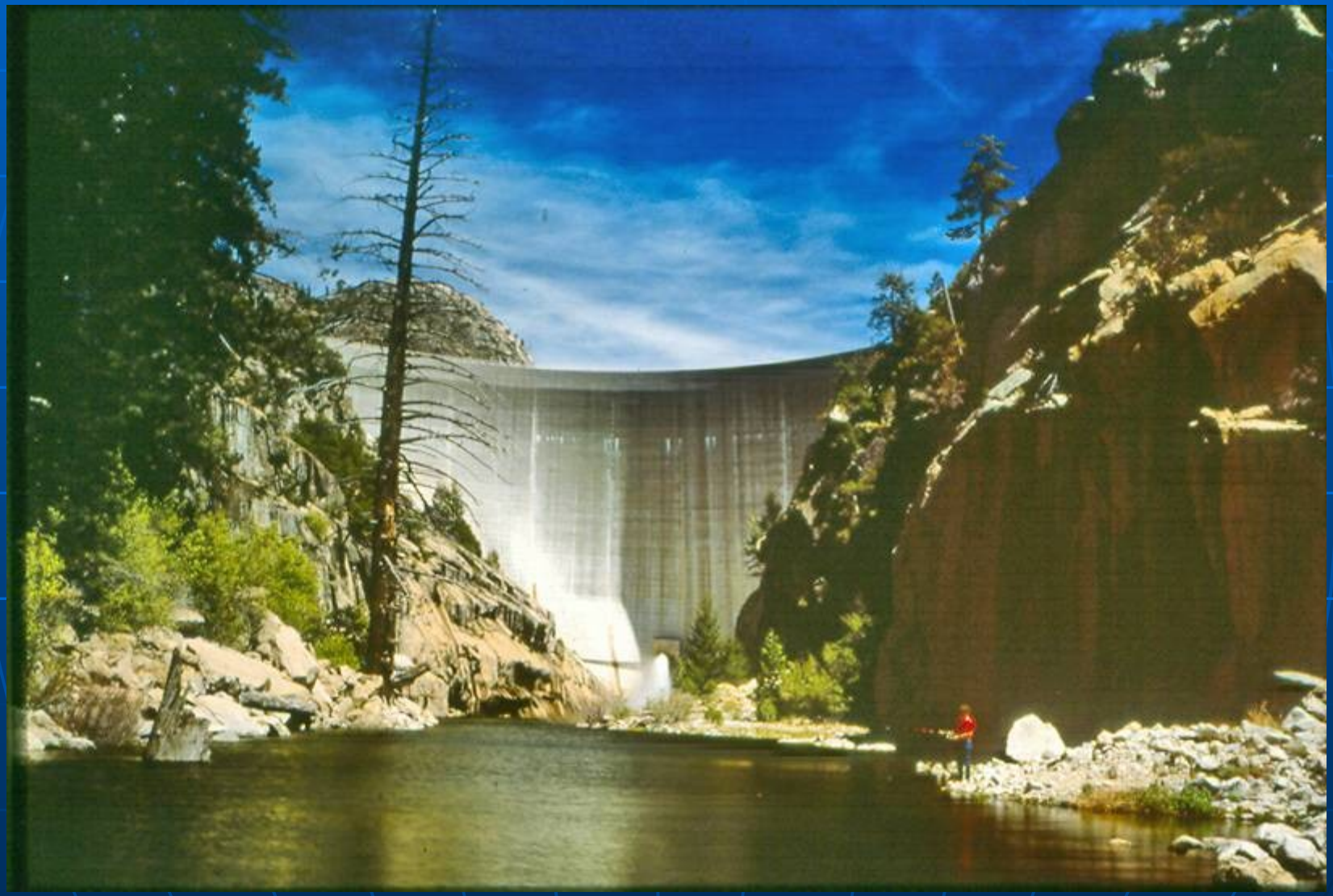
USSD, through its professional Members, is . . .



dedicated to achieving its goals

through programs that foster the development

of safe dams and socially and environmentally responsible water projects.



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